

SCALABLE HARMONIC LASER SOURCE AND METHOD

ABSTRACT OF THE DISCLOSURE

A laser array architecture scalable to very high powers by closely stacking fiber amplifiers, but in which the output wavelength is selectable to be in the visible or ultraviolet region, without being restricted by the wavelengths usually inherent in the choice of fiber materials. A pump signal at a fundamental frequency is amplified in the fiber amplifier array and input to an array of nonlinear crystals that function as harmonic generators, producing an output array at a desired harmonic of the fundamental frequency. A phase detection and correction system maintains the array of outputs in phase coherency, resulting in a high power output with high beam quality, at the desired frequency. The array of nonlinear crystals may a single array to produce a second harmonic output frequency, or a combination of multiple cascaded arrays configured to produce a selected higher order harmonic frequency.